Institut für Höhere Studien (IHS), Wien
Institute for Advanced Studies, Vienna

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Verification of the New Trade Theory in EU's Trade with CEECs

Evidence from Panel Data 1990–1997

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Abstract

The new trade theory explains several features of the current development of EU's trade with CEECs better than the Heckscher-Ohlin model. In 1997, CEECs participated in the European economy with levels of intraindustry trade comparable to peripheral EU countries. However, this induced increased specialization in EU countries, which contrasts with the development in the previous decades. The development of intraindustry trade is positively related to the growth of wages and negatively to interest rates.

Zusammenfassung

Um gewisse Merkmale der gegenwärtigen Entwicklung des Osthandels der EU zu erklären, ist die neue Außenhandelstheorie besser geeignet als das Heckscher-Ohlin-Model. Im Laufe der 90er Jahre beteiligten sich die ostmitteleuropäischen Länder immer aktiver an der europäischen Arbeitsteilung. Ihre Anteile des intraindustriellen Handels entsprachen 1997 bereits jenen der peripheren EU-Länder. Dies führte zu einer verstärkten Spezialisierung innerhalb der EU, die sich deutlich von der Entwicklung der vorhergehenden Jahrzehnte unterscheidet. Der intraindustrielle Handel der EU mit den ostmitteleuropäischen Ländern hängt positiv vom Lohnwachstum und negativ von Zinssätzen ab.

Keywords

New trade theory, intraindustry trade, kernel estimates of distribution, fixed effects model.

Schlagwörter

Neue Außenhandelstheorie, intraindustrieller Handel, Kernschätzer der Verteilung, Modell mit fixen Effekten.

JEL Classifications

F12, F14, F15

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1. Introduction

Central and Eastern European countries (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia) show significant differences in reform progress. On the one hand, the Czech Republic, Estonia, Hungary, Poland, Slovakia, and Slovenia have attracted a major part of foreign direct investment and have made significant progress in privatization and institutional changes. On the other hand, Bulgaria, Romania, Lithuania, and Latvia are considered to have progressed more slowly. This has led to the decision of the European Commission to start negotiations with the former countries (with the exception of Slovakia for political reasons), while the latter could join the European Union (EU) in the so-called second wave of the Eastern enlargement. Therefore, one question analyzed here is whether both groups of countries show similar progress in restructuring their foreign trade with the European Union.

Under the assumption that the factor endowments of a country determine foreign trade patterns, the restructuring of East-West trade reflects the convergence of Central and Eastern European countries (CEECs) to EU countries because it reveals the underlying convergence of the CEECs to the developed countries. The growth of intraindustry trade, which is observed in intra-EU trade, also dominates the recent East-West trade development. This could lower the possible adjustment costs on the incumbent countries of the European Union. Furthermore, the rise of intraindustry trade is generally seen as a confirmation of the new trade theory based on differentiated products and increasing returns to scale.

The rest of the paper is organized as follows. The next section presents a model with differentiated products, increasing returns to scale and monopolistic competition according to Dixit and Norman (1980) and Helpman and Krugman (1985). Section 3 presents the development of EU's trade with the CEECs in comparison to intra-EU trade and trade with selected third countries. Finally, conclusions will be presented in Section 4.

2. Trade Pattern in the New Trade Theory

Since the opening up of Eastern Europe in the late 1980s, the expectations of the impact of trade liberalization between the EU (and other OECD countries) and the CEECs have been driven by the arguments of the Heckscher-Ohlin model. The CEECs are seen to be abundant in qualified and unqualified labor, some raw materials, and energy. This pattern of factor endowments is similar to that of Southern European countries, while Northern member states of the European Union are abundant in capital and human capital. Therefore, the analysis of the impact of trade liberalization with the CEECs focuses (first) on competition with Southern European countries and (second) on factor price equalization through liberalized trade (see Collins and Rodrik, 1991, Begg et al., 1990 and other).

However, the Heckscher-Ohlin model fails to explain many of the features of the recent developments in foreign trade between developed countries, including the increasing share of intraindustry trade. This also matters more and more for East-West trade. Recent studies have highlighted the increasing importance of intraindustry trade between the EU and the CEECs (see for example Hoekman and Djankov, 1997, Aturupane, Djankov, and Hoekman, 1999, and Fidrmuc et al., 1998 and 1999).

The pattern of the participation of the CEECs in the international division of labor leads to important implications for political economy. The specialization of the CEECs on labor, energy, and raw-material intensive sectors implies, on the one hand, a corresponding contraction of these sectors in the EU countries. On the other hand, capital-intensive goods and R&D products would not face any additional competition in the EU and could expand to the newly emerged markets of the CEECs. A fundamentally different development can be expected in the case of intraindustry trade. All sectors, and often the same enterprises, are facing similar competitive pressure and new market opportunities following the opening up of Eastern Europe and/or the EU Eastern enlargement.

Thus, the major political concerns in connection with the enlargement relate to the different factor endowments of the EU and the CEECs. The fears of wage decline and/or increasing of unemployment, migration from the CEECs to the incumbent member states, and the displacement of the labor intensive industries in the EU by the low-wage membership candidates are based on the comparatively low capital stock relative to abundant labor. Furthermore, the low capital to labor ratio is reflected in low GDP per capita figures that are used as the main selection indicator for subsidies from Structural Funds. Similarly, the possible entitlements to the transfers within the Common Agricultural Policy are related to the abundant agricultural resources (agricultural land) in the CEECs.

The endowment with production factors in different countries is reflected by foreign trade patterns. Insofar as foreign trade in manufacturing products between the EU and the CEECs is relatively liberalized, the analysis of foreign trade can already provide important conclusions concerning national factor endowments. Moreover, relatively good data on foreign trade are available, while the data on factor endowments are less reliable.

The model of trade in differentiated products follows Dixit and Stiglitz (1977). The presentation of the basic model is mainly based on Helpman and Krugman (1985), and Dixit and Norman (1980). The basic properties of the model are as follows. There are two countries: domestic and foreign (the foreign country is denoted by a star). The countries are endowed with two factors of production, called labor (L) and capital (K) that are immobile among the countries. We have two sectors (industry, and the rest of the economy), each producing one type of goods. The first product, which is called numeraire (labeled by 0), embodies all non-industrial products.

The industry produces differentiated products, which have the same and finite elasticity of substitution between any pair of product varieties.

Each variety of the industrial product is produced under increasing returns to scale. The industry can accommodate many producers, each producing a different variety. This leads to monopolistic competition in this industry (Chamberlian monopolistic competition). Every firm chooses a variety and its pricing so as to maximize profits, taking as given the variety choices and pricing strategies of the other producers. The varieties and corresponding variables are labeled by 1, …, N, where N is the potentially infinite number of varieties in the world economy. The number of actually produced varieties is determined by the resources in both countries. As far as N is sufficiently large, the number of varieties can be taken as a continuous variable.

The consumers in both countries have the same preferences represented by the Cobb-Douglas utility function given as

$$U\left(c_0, c_i\right) = \left(\sum_i c_i^{\,b}\right)^{\frac{a}{b}} c_0^{1-a}, \tag{1}$$

which is increasing and homothetic in its arguments. The assumption of concavity of the utility function requires $0 < \alpha < 1$. The first term, $\sum_i c_i^{\,b}$, is a scalar measure of the consumption of differentiated products. The subutility function of the consumption of differentiated products, $u = (\sum_i c_i^{\,b})^{1/b}$, is concave and symmetrical. These properties imply that the individuals will choose to consume equal quantities of all varieties if they are equally priced. The elasticity of substitution for the Cobb-Douglas utility function between the differentiated goods and the numeraire is unity. Therefore $0 < \beta < 1$, because otherwise the differentiated products among themselves would be worse substitutes than both product types to each other.

The demand for the numeraire in terms of consumption of differentiated products and income can be found in the consumers' budget condition, $c_0 = y - \sum_i p_i c_i$, which can be inserted into the utility function. This gives us the inverse demand functions for the differentiated good, $p_i = \alpha c_i^{b-1} y / \sum_i c_i^{\,b}$, and demand of the numeraire, $c_0 = y(1 - \alpha)$. Because the number of consumers was indexed to 1, y represents both consumer's and world income. The demand of the domestic or foreign country can be found by multiplying world demand by the share of the country in world income.

The numeraire is produced under constant returns to scale and perfect competition. The price of the numeraire is indexed to unity, $p_0 = 1$. The numeraire has a unit cost function $b(\cdot)$ of factor prices, w and w^*. The perfect competition in this sector implies the zero profit condition, $b(w) = b(w^*) = 1$.

The production of each variety of differentiated products is undertaken by only one producer, because all new firms may produce a new variety and thus supply the whole market with one

variety. The number of firms (varieties) is large enough and, therefore, the oligopolistic interactions are negligible. Each firm maximizes its profit given the inverse demand function, and treating the outputs and world income as given. The entries occur until the marginal firm is just breaking even. This implies zero profits, since marginal revenues equal marginal costs. The marginal revenues are given by the elasticity of inverse demand derived from the Cobb-Douglas utility function, which is approximated by $\varepsilon_{p,x} = \beta - 1$. Therefore, the marginal revenue for a producer of the variety i will be βp_i. Under the assumption that all firms face the same cost function[1] derived from the production function under increasing returns to scale (implying decreasing average and marginal costs), all firms produce the same uniquely defined output level of differentiated products, x.

This allows us to find exports and imports of the home country which accounts for a fraction λ of world income. Under homothetic preferences, consumers of the home country consume a corresponding share of the world's production of the numeraire, $c_0 = \lambda (x_0 + x_0^*)$, and each variety, $c_i = \lambda (x_i + x_i^*)$, of the $N = n + n^*$ differentiated products. Let home country be a net exporter of differentiated products. This assumption implies that the share of the home country in the world production of differentiated products is larger than its share in world income, $\sigma = n/N > \lambda$. The home country exports 1, 2, …, n varieties in value $(1-\lambda) px$ each and imports n^* times λpx varieties and consumption surplus over the domestic production of the numeraire, $c_0 - x_0 = \lambda x_0^* - (1-\lambda) x_0$, from the foreign country, ensuring that trade is balanced.

On the one hand, the inter-industry trade (that is, the net exchange of differentiated products for the numeraire) is defined as $T_N = npx (1 - \lambda) - n^* px \lambda = Npx (\sigma - \lambda)$. The home country has a positive balance of trade with the differentiated products if $(\sigma - \lambda) > 0$. Therefore, the inter-industry trade is explained by the differences in factor endowment (that is, by comparative advantage).

On the other hand, we will see the predominant pattern of trade as one of intraindustry trade, $T_I = 2Npx \lambda (1 - \sigma)$, if both foreign and home countries have a similar structure (that is, the share of the production of differentiated products) and are of similar size. As opposed to the trade between the industries, the location of production of the particular varieties is distributed between the countries at random.

In the model with differentiated products, the share of the intraindustry trade represents a measure of the similarity of two economies. Krugman (1981) showed in a model with two industries and two industry-specific factors of production that the index of intraindustry trade equals the index of similarity in factor proportions.

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[1] Dixit and Norman (1980) assume a cost function $C(w,x(\,.\,)) = f(w)h(x(\,.\,))$, where f depends on factor prices and h on the output quantity with decreasing average costs, $h(x(\,\cdot\,))/x(\,\cdot\,)$. Then, the marginal costs of a producer are $MC_i = f(w)h'(x(\,\cdot\,))$.

3. Verification of the New Trade Theory in EU's Trade with the CEECs

This section compares the development of trade of the European Union with the Central and Eastern European countries and EU's trade with EU member states between 1990 and 1997 (see Appendix). The trade of the EU with two non-European countries (Israel and Turkey)[2] and three former Soviet Union countries (Russia, Ukraine, and Moldova) provides another benchmark for comparison. Trade flows by three-digit SITC commodity groups in terms of current prices in US dollars are published by the UN, as reported by the EU countries.[3]

The period under consideration was characterized by dramatic institutional changes apart from the opening up of Eastern Europe, which is the focus of this analysis. Germany reunified in 1990. Slovenia and Baltic States became independent in 1991, while the former Czechoslovak federation divided into the Czech Republic and Slovakia in 1993. Austria, Finland and Sweden joined the European Union in 1995. Moreover, the UN introduced a new scheme of trade statistics by detailed commodity groups (SITC Revision 3), starting this decade. Those developments all affected the quality and availability of trade data in the investigated period.

3.1 Intraindustry Trade

The growth of Central and Eastern European exports to the EU was associated with a significant restructuring of trade. The redirection of goods that were traditionally exported to the CEECs and the former Soviet Union did not play an important role. Hoekman and Djankov (1996) find that the export growth concerned either products, which were not exported to Eastern European countries, or that such exports were substantially upgraded. The growth of intraindustry trade is the most important feature in the development of the East-West trade.

The Grubel-Lloyd index of intraindustry trade (Grubel and Lloyd, 1971) sheds light on the kind of restructuring of foreign trade between the EU and the CEECs. The index represents the share of absolute value of the intraindustry trade in trade turnover, that is

$$GLI_t = 1 - \frac{\sum_i \left| X_{it} - M_{it} \right|}{\sum_i \left(X_{it} + M_{it} \right)}, \qquad (2)$$

[2] These countries were selected because they have, similarly to CEECs, intensive trade relations with the EU. Moreover, Turkey is striving full membership in the EU together with the selected CEECs.

[3] Trade flows reported by EU countries may significantly differ from those reported by the CEECs. For example, Polish imports from Germany correspond to only about 80 % of the reported value of German exports to Poland, while the relation between German imports from Poland and Polish exports to Germany is relatively close to 100 %. Furthermore, unrecorded trade may also be significant between these countries.

where X and M denote exports and imports by commodity groups i, respectively. An index value of 0 shows that there is exclusive inter-industry trade, i.e. a complete specialization on different products for each country, while an index value of 1 indicates exclusive intraindustry trade.

In 1990, the shares of the intraindustry trade in trade turnover, as computed by Grubel-Lloyd indices for EU's trade in manufacturing products by SITC three digit commodity groups, were between 25 % (24.8 % for Romania and 28.7 % for Bulgaria) and nearly 50 % (43.0 % for former CSFR and 46.9 % for Hungary). These shares corresponded to the importance of the intraindustry trade in EU's trade with Turkey (22.8 %), Greece (25.4 %), Portugal (43.3 %), Finland (48.8 %), and Israel (51.5 %) in 1990. The latter countries had relatively liberal trade regimes vis-àvis the EU,[4] as well as a peripheral location and a relatively less developed manufacturing sector. However, these shares of intraindustry trade were by far below the levels of more centrally located EU countries, which were between about 60 % (Italy: 61.8 % and Spain: 66.6 %) and about 80 % (France: 81.9 %, Netherlands: 78.9 %, Germany: 75.2 %, and the UK: 74.2 %).

Between 1991 and 1997, all CEECs experienced a significant growth of intraindustry trade. As a result, the levels of intraindustry trade in EU's trade with the Czech Republic (66.4 %), Slovenia (60.3 %) and Hungary (58.3 %) are now comparable to or even slightly larger than in EU's trade with Spain (67.2 %), Italy (61.5 %), Sweden (61.8 %), Denmark (62.7 %) and Switzerland (65.6 %) in 1997. In turn, Estonia (37.6 %), Poland (41.7 %) and Slovakia (50.0 %) showed somewhat lower levels of intraindustry trade in 1997. These levels were comparable to these of Ireland (49.0 %), Finland (49.9 %), Portugal (49.9 %), and Israel (50.2 %). However, the share of intraindustry trade in EU's trade with Romania (29.3 %) and Bulgaria (33.9 %) still remained only slightly above the level of EU intraindustry trade with Greece (26.1 %) and Turkey (26.2 %), while the share of intraindustry trade in EU's trade with Lithuania (22.9 %) and Latvia (23.9 %) is slightly below this level.

The growth of shares of intraindustry trade sharply contrasts with the stagnation or even relative reduction of the levels of intraindustry trade in the European Union: The share of the intraindustry trade in manufacturing products increased in Belgium, Germany, Greece, Spain, Finland, Portugal and the UK. However, its increase with respect to Germany seems to be largely driven by the reunification in 1991. The level of the intraindustry trade in EU's trade with Germany stagnated in the following years. Similarly, intraindustry trade between EU and Portugal stagnated from 1991 to 1994 at levels below the initial level, and has increased again

[4] Greece joined the European Union on January 1, 1981, and Portugal and Spain on January 1, 1986. Finland, Israel and Turkey had free trade agreements with the European Union in the analyzed period.

since 1995. Belgian, Greek, Spanish, Finnish, and British intraindustry trade with the EU did not increase either between 1991 and 1994.

The largest declines in the levels of the intraindustry trade in manufacturing products with the EU are observed in Ireland (-9.1 percentage points), Sweden (-4.8 percentage points), and Denmark (-2.8 percentage points). These countries' shares of intraindustry trade were relatively low within the European Union. Moreover, the countries were integrated into the union relatively late. They are located at the periphery of the EU, and some of them had to catch up with the EU. Furthermore, the European Union made significant progress in trade liberalization including the completion of the single market in 1992, the introduction of a common economic area with EFTA countries (with the exception of Switzerland) in 1994, the integration of three EFTA countries (Austria, Finland, and Sweden) in 1995, and the preparation of a common currency. All these factors are likely to have a positive effect on the development of intraindustry trade. In contrast to recent development, the mentioned countries also showed a fast convergence of their intraindustry trade to EU levels in previous decades. For example, Spanish intraindustry trade with the current member states of the European Union (as computed by three-digit commodity groups according to SITC revision II) increased by about 13 percentage points between 1979 and 1989.

The nearly uniform downward development of the Grubel-Lloyd indices in the European Union cannot be explained solely by business cycles, although the slow-down of EU growth also might have played a role at the beginning of the 1990s. The extension of the intraindustry cooperation to the CEECs can also only explain the performance of intraindustry trade in countries with intensive trade relations with the CEECs (Austria and Sweden), but not the development in Spain and Ireland. It rather seems that the opening up of Eastern Europe and its stepwise integration (Europe Agreements) induced increased specialization in the EU. The pattern of development of Grubel-Lloyd indices indicates that a substantial part of this adjustment occurred between 1991 and 1994, when virtually all member states of the European Union faced stagnated or declining shares of intraindustry trade.

This finding indicates a high role of vertical intraindustry trade (trade in products of different qualities) in EU's trade with the CEECs, which is confirmed by other studies. Aturupane, Djankov, and Hoekman (1999), for example, report that vertical intraindustry trade accounts for 80 % to 90 % of total intraindustry trade between the EU and the CEECs.

EU's intraindustry trade is concentrated on manufacturing products. Correspondingly, the shares of intraindustry trade in total trade (including manufacturing and non-industrial products) of the European Union are slightly lower than those of manufacturing trade alone. In 1997, the shares of intraindustry trade in total trade were up to 3 percentage points below the shares of trade in manufacturing, although this difference reached -5.2 percentage points with regard to the Netherlands. Only Greece had significantly higher shares of intraindustry trade in total

trade (29.4 % in 1997) than in manufacturing trade (26.1 %). This could reflect the importance of both the agricultural sector and tourism in this country.

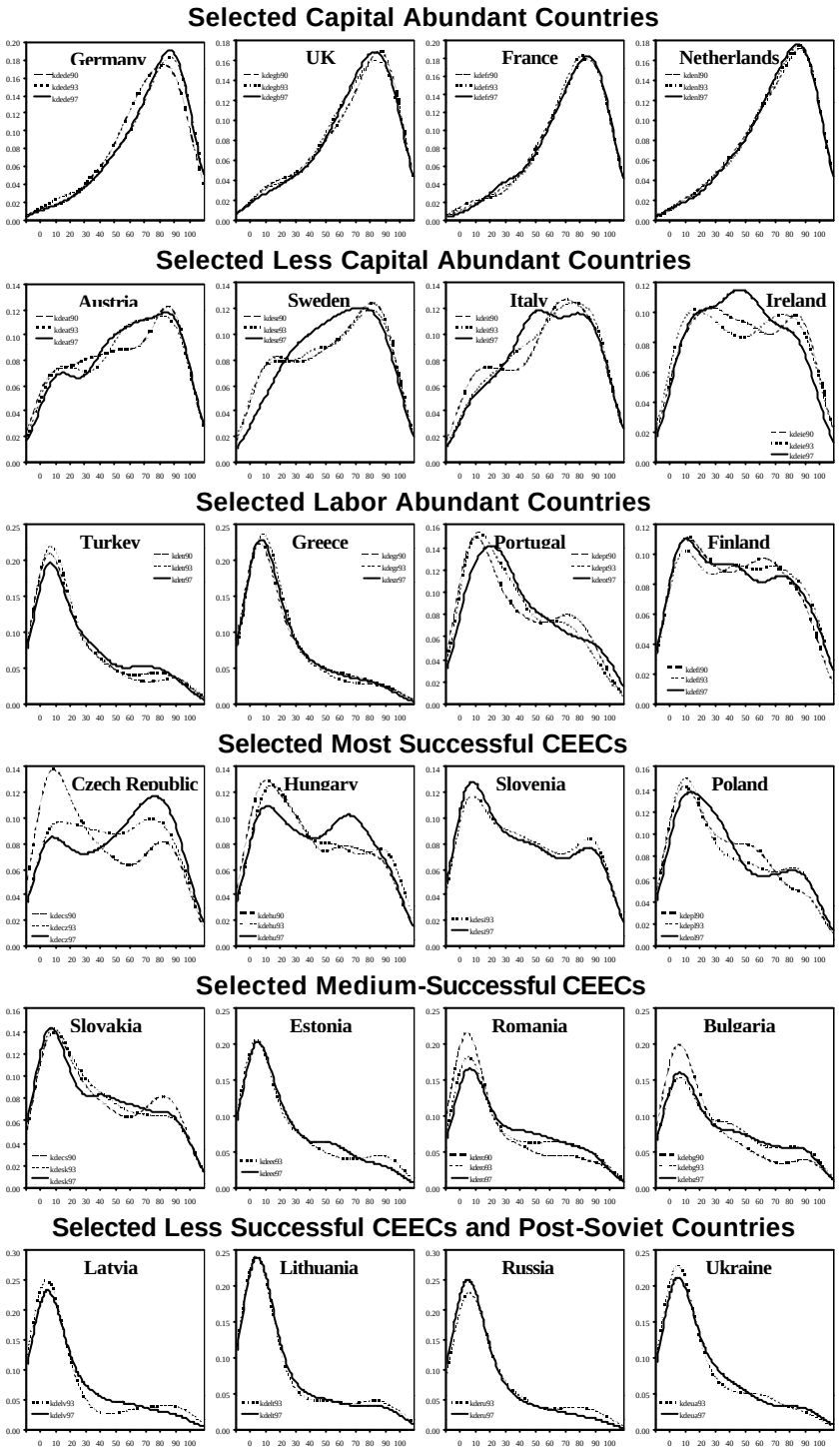
The pattern of development of intraindustry trade in total trade shows similarities and interesting differences in comparison to the trends described above. On the one hand, the rise of intraindustry trade in EU's trade with the associated countries is fully comparable with that described for the manufacturing products. On the other hand, intraindustry trade of the EU with eight countries increased significantly, while only six EU countries (Austria, Denmark, Greece, Spain, Ireland and Sweden) experienced slight declines of the Grubel-Lloyd indices between 1990 and 1997. This implies that the development of intraindustry trade in industrial and non-industrial products was significantly different in the analyzed period. This surprising development rather confirms the hypothesis that the decline of intraindustry trade in manufacturing products was a result of the trade liberalization with Central and Eastern Europe. Intraindustry trade in non-industrial products (largely agricultural products), which were not liberalized by the Europe Agreements, continued to rise in intra-Union trade in this period.

3.2 Pattern of Intraindustry Trade

Intraindustry trade, as explained by models of increasing returns to scale and differentiated products, results from the random location of production among countries. The high shares of intraindustry trade among similarly developed OECD countries, which are not well explained by Heckscher-Ohlin model, are generally seen as major evidence in favor of the new trade theory. However, this approach uses aggregate information in the form of different indices of intraindustry trade.

Previous empirical studies were looking for industry-specific factors (for example importance of economies of scale, measures of product differentiation, number of firms, tariff levels, and size) or country-specific factors (for example size, GDP per capita, and distance to trade partners) determining shares of intraindustry trade. These factors and their combinations should determine the share of intraindustry trade for each industry. Thus, the distribution of Grubel-Lloyd indices should be rather uniformly spread over a broad interval, or nested with respect to specific factors.

Figure 1: Kernel Estimates of the Distribution of the Intraindustry Trade Pattern



Note: Values of Grubel-Lloyd indices and their distribution are scaled on x-axis and y-axis, respectively. The solid line shows the estimated distribution in 1997, while the dotted lines show the estimated distributions in 1990 and 1993, respectively.

Contrary to this, the new trade theory predicts specific values of intraindustry trade for each sector, although the shares of intraindustry trade for individual commodity groups (belonging to broader sectors) should randomly fluctuate around sectoral averages. In particular, the Dixit-Norman model predicts one sector with a zero level of intraindustry trade, and another sector with a high share of intraindustry trade.

The change in the pattern of East-West trade from Central and Eastern European specialization on products in which they have comparative advantage to intraindustry trade can be graphically illustrated by help of histograms, which are the simplest non-parametric density estimate of the distribution of a random variable. They present the shares of the commodity groups gathered in certain intervals according to the values of the Grubel-Lloyd indices. As an alternative to histograms, the kernel density estimator of distribution can be applied here. An advantage of the kernel density estimator in comparison to a histogram is its continuity and lower sensitivity. Smoothing is done by putting less weight on observations that are further away from the point evaluated (see Silverman, 1986). The kernel density estimate of a series *X* at a point *x* is estimated by

$$f(x) = \frac{1}{Nh} \sum_{i=1}^{N} K\left(\frac{x - X_i}{h} \right), \tag{3}$$

where *N* = 100 is the number of observations, *h* is the bandwidth (or smoothing parameter) and *K*( ) is a kernel function (that is, weighting function) that integrates to one. The bandwidth *h* controls the smoothness of the density estimate. The larger the bandwidth, the smoother the estimate. Silverman (1986) advises a bandwidth given by

$$h = 0.9kN^{-\frac{1}{5}} \min\left\{ s, \frac{R}{134} \right\}, \tag{4}$$

where *N* is again the number of observations, *s* is the standard deviation, and *R* is the interquartile range of the series. The factor *k* is a canonical bandwidth-transformation, which adjusts the bandwidth so that the automatic density estimates have roughly the same amount of smoothness across various kernel functions. This criterion gives a bandwidth of about 10 for all selected countries. Therefore, I have set uniformly the bandwidth to this level, h = 10.

The kernel function for a Normal (Gaussian) distribution is defined as

$$K(u) = \frac{1}{\sqrt{2p}} e^{-\frac{1}{2}u^2}, \tag{5}$$

where u is the argument of the kernel function. I estimated kernel functions for selected countries belonging to capital abundant, less capital abundant, capital scarce countries, and CEECs.

The shape of the estimated distribution for these countries is in accordance with previous expectations based on the Dixit and Norman model, and our expectations on the role of a country in the international division of labor. All countries tend to peak either at the low or the high values of Grubel-Lloyd indices. Several countries have two peaks at either end of the spectrum, while only a few countries have a minor peak at the center of the interval (e. g. Sweden and Spain).

We find significant differences between the distribution patterns of Grubel-Lloyd indices across (Western) Europe. On the one hand, nearly all commodity groups are close to the zero level of Grubel-Lloyd indices in EU's trade with Greece, Israel, Turkey, and to a lesser extent, also with Finland and Portugal. All these countries are generally considered to be labor- and land-abundant countries. On the other hand, the trade of Belgium, Germany, France, the UK and the Netherlands concentrates on commodity groups with high levels of intraindustry trade, the majority of commodity groups being characterized by Grubel-Lloyd indices between 70 % and 90 %. Not surprisingly, all countries of the second group are considered to be capital abundant countries. Furthermore, only a few commodities reach values significantly different from the average value in both country groups.

The remaining countries have an intermediate role in the European division of labor. They mainly include smaller countries like Austria, Switzerland, Denmark, Spain, Ireland, Italy, and Sweden. These countries have a rather uniform distribution of trade across commodity groups in the whole range of the spectrum. The distribution patterns in several countries seem to have multiple peaks (for example Denmark and Ireland) at the lower and upper end of the interval, or some values of Grubel-Lloyd indices are attributed to much higher numbers of product groups than to the neighboring values (for example Sweden).

In 1990, the distribution patterns of EU's trade with the CEECs strongly resembled those of the labor-abundant countries in Southern Europe. However, the rise of intraindustry trade in the following years was reflected by a corresponding change of the intraindustry trade pattern in EU's trade with the Czech Republic, Hungary, and Slovenia, and to a lesser extent, also with Estonia, Poland, and Slovakia. The distribution pattern in the EU's trade with these country groups is now much more similar to the EU's trade with the less capital abundant EU countries, Switzerland, and the Mediterranean region (Israel), although the most "successful" CEECs[5] still have a downward trend in distribution. This shows that trade restrictions significantly reduce intraindustry trade in several commodities.

[5] I use the selection of CEECs in more and less "successful" according to opinions of the European Commission on their progress towards accession.

The dramatic change of distribution of Grubel-Lloyd indices in CEECs indicates significant restructuring in the whole range of products, which was much more pronounced than the rise of aggregate indices of intraindustry trade would imply. The shape of the distribution of intraindustry trade in six Central European countries changed completely between 1990 and 1997, while the simple average value of Grubel-Lloyd indices increased only by about 6.5 percentage points, and the weighted average (weighted by shares of commodities in trade turnover), which is the Grubel-Lloyd index, increased by 13 percentage points. In turn, EU's trade with Bulgaria, Estonia, Latvia, Lithuania, and Romania still bears a strong resemblance to the distribution patterns of South European countries.

The shape of the estimated distribution has been surprisingly stable for both capital and labor abundant countries in Western Europe. Contrary to this, I found relatively strong restructuring of trade in the group of the smaller countries with an intermediate position in the European division of labor (less capital abundant countries). These countries had a more pronounced bimodal distribution of Grubel-Lloyd indices at the beginning of the investigated period. In 1997, the peak of the estimated distribution moved slightly to the left in all these countries. The changes were especially strong in Ireland and Sweden, that is in the countries with the highest declines of intraindustry trade in the analyzed period. This again confirms that the opening-up of Eastern Europe induced significant restructuring and increased specialization in intra-EU trade.

In summary, the estimated distributions seem to imply the existence of two major sectors, the first sector being characterized by a low or zero level of intraindustry trade, while the second sector reaches a very high share of intraindustry trade. The different shares of intraindustry trade in Europe are given by weights of the sectors in the national economies. This confirms the prediction by models with differentiated products and increasing returns to scale.

The distribution of intraindustry trade patterns in the "successful" CEECs (Czech Republic, Hungary, and Slovenia) is relatively different from other analyzed countries, because EU's trade with these two countries is represented at the lower as well as the upper bound of Grubel-Lloyd indices. Thus, the two-peak pattern in the Czech Republic and Hungary is much more pronounced than in any other country of the sample. Contrary to this, intraindustry trade patterns of Bulgaria and Romania are still more similar to labor-abundant countries (Turkey and Greece).

Table 1: Determinants of Intraindustry Trade in the CEECs

	Manufacturing Products			All Products		
	1991-1997	**1993-1997**	**CEE**	**1991-1997**	**1993-1997**	**CEE**
interest rate (deflated by	-0.042	-0.047	-0.885	-0.025	-0.035	-0.853
exchange rate index	(-1.657)	(-1.369)	(-2.181)	(-0.996)	(-1.116)	(-2.075)
growth rate of ECU-wages	0.108	0.115	0.743	0.077	0.084	0.714
	(6.300)	(5.324)	(3.847)	(4.285)	(3.641)	(3.681)
GDP growth in EU15	2.430	2.357	0.504	2.072	1.990	0.763
	(2.483)	(2.467)	(0.359)	(2.169)	(2.158)	(0.518)
GDP growth in the	0.255	0.317	0.522	0.384	0.446	0.587
associated countries	(1.870)	(1.807)	(2.537)	(2.914)	(2.633)	(2.608)
Dummy for 1997	-3.865	-3.657		-3.579	-3.562	
	(-2.154)	(-1.854)		(-1.950)	(-1.821)	
Hungary	36.447	35.567	41.906	33.330	32.544	37.622
	(11.753)	(10.097)	(11.685)	(9.748)	(8.094)	(10.074)
Poland	22.653	22.354	23.634	19.408	19.203	19.550
	(9.122)	(8.535)	(6.789)	(7.957)	(7.506)	(5.339)
Czech Republic	41.698	41.533	42.344	38.878	38.836	38.145
	(13.106)	(12.889)	(12.542)	(12.300)	(12.302)	(10.975)
Slovakia	26.345	26.029	26.810	25.883	25.686	25.151
	(7.047)	(6.875)	(6.906)	(7.104)	(6.978)	(6.333)
Slovenia	35.298	35.110	32.459	33.621	33.485	29.925
	(6.760)	(6.687)	(8.716)	(7.061)	(7.045)	(8.001)
Romania	14.383	14.245		13.459	13.435	
	(7.600)	(6.443)		(7.154)	(6.086)	
Bulgaria	16.510	16.909		16.669	17.396	
	(8.172)	(7.790)		(8.287)	(8.486)	
Estonia	23.027	22.786		20.090	20.020	
	(7.771)	(7.261)		(7.440)	(6.984)	
Lithuania	6.268	6.006		4.422	4.296	
	(1.963)	(1.770)		(1.333)	(1.235)	
Latvia	10.207	10.120		4.429	4.559	
	(3.268)	(2.985)		(1.521)	(1.473)	
Number of available observ.	54	48	25	54	48	25
Adjusted R^2	0.7909	0.7576	0.6800	0.8038	0.7761	0.6604

Note: The dependent variable is the index of marginal intraindustry trade (*MIIT*) in trade of the European Union with the CEECs (Bulgaria, Hungary, Poland, Romania, Slovakia, Slovenia and the Czech Republic, Estonia, Latvia, and Lithuania) by SITC three-digit commodity groups in the manufacturing sector. Both models include country dummies. The covariance matrices of the coefficients are corrected for possible heteroscedasticity. T-values are shown in parenthesis.

3.3 Determinants of the Trade Pattern in CEECs

The shares of intraindustry trade of catching-up countries should increase as a part of the convergence to the income level of developed countries. The convergence of trade structure is driven by the underlying convergence of national factor endowments, that is, by capital accumulation in the CEECs. Therefore, the indicators of capital accumulation related to available labor should have significant effects on the rise of intraindustry trade. The relation between the role of intraindustry trade and income levels in both countries was already revealed in the first studies on the determination of intraindustry trade. For example, Loertscher and Wolter (1980) noted that intraindustry trade between countries is intense if the average level of their development is high, the difference in their levels of development is relatively small, and if the average size of their aggregate outputs is high and similar.

Correspondingly, this section estimates the relation between the share of intraindustry trade in EU's trade growth with the CEECs, factor prices[6] (interest rates, and wage growth in ECU), and GDP growth in the European Union and the associated countries.[7] The dependent variable is the index of marginal intraindustry trade (*MIIT*) for manufacturing products and total trade, which measures the change of intraindustry trade better than the Grubel-Lloyd index (see Brüllhart, 1994). The index of marginal intraindustry trade is constructed along the lines of the Grubel-Lloyd index, but for annual change of exports and imports (denoted by ΔX_i and ΔM_i, respectively),

$$MIIT_{it} = 1 - \frac{\left|\Delta X_i - \Delta M_i\right|}{\left|\Delta X_i\right| + \left|\Delta M_i\right|}. \qquad (6)$$

Similarly to the Grubel-Lloyd index, the values of the MIIT-index range between 0 (the change in the trade flows in the commodity group *i* can be completely attributed to the inter-industry trade) and 1 (the trade change is due only to intraindustry trade).

The regression analysis, using a one-way fixed effect model for panel data (see Table 1), is provided for all ten associated countries in the longest available time period (1991-1997), which provides 54 observations. Data for Slovenia as well as for the Baltic States can be used only for the 1993-1997 period, those for the Czech Republic and Slovakia for 1994-1997. In the sensitivity analysis, I compare the estimated relationship for progressed reform years (1993-

[6] Factor prices, which are easier available and more reliable than data on gross capital formation and employment in CEECs, are taken as proxies for the development of factor endowments in these countries.

[7] Data on discount rate and dollar wages are according to Business Central Europe and are available in the internet (web-site: `http://www.bcemag.com`). GDP growth in the EU is according to the OECD (without former East Germany before 1991). Missing data for the Baltic States were taken from the Transition Report 1998 of the EBRD and Short-term Economic Indicators on Transition Economies published by the OECD. Lending rates for Bulgaria and Estonia are according to the IMF.

1997), providing a similar data base for all countries, and only for Central European countries (that is, excluding Bulgaria, Romania, and the Baltic States). In general, a sensitivity analysis confirms the overall stability of estimated relationship. The explanation of intraindustry trade of all products is slightly worse than the fit of manufacturing products only. We should keep in mind that restricting the sample to selected years and countries considerably reduces the available number of observations and degrees of freedom.

Under assumption that the deprecations are constant in the short run and can be captured by fixed country effects, capital accumulation is equal to investment depending on real interest rates. Therefore, real interest rate can be included to the regression analyses to proxy for change of capital stock.

The interest rate (discount rates of Central Banks or lending rates for Bulgaria and Estonia, which do not publish discount rates for time period since the monetary development is under the supervision of currency boards) was deflated by the index of the US dollar exchange rate. This variable is a proxy for the development of export prices insofar as prices in foreign trade are generally more stable than in protected sectors. Moreover, this interest rate should equal the international interest rate (interest rate parity condition) corrected for country-specific uncertainty in an open economy. As far as the differentiated products are assumed to be capital intensive, the interest rate should have a negative effect on intraindustry trade, because a high price of capital encourages the concentration on labor intensive products (numeraire). This effect is not significant for more progressed reform years, although the coefficient nearly equals that estimated for the whole analyzed period. The effect of the interest rate seems to be much more important for the more successful CEECs (former CSFR, Hungary, Poland, and Slovenia).

The wage levels are expected to have an opposite effect. Wage growth promotes concentration on capital intensive products with high shares of intraindustry trade. This effect was confirmed for all sub-samples. Therefore, it seems that the rise of intraindustry trade is mainly supported by the convergence of wage levels in convertible currencies.

GDP growth in the European Union and in each of the associated countries accounts for the cyclical behavior of trade. We can see that intraindustry trade is pro-cyclical, i.e. that it increases in boom periods and vice versa. The effect of demand in the European Union is significantly stronger than in the domestic business cycle.

In 1997, the CEECs faced very diverse economic development: On the one hand, the GDP declined significantly in Bulgaria and Romania and the Czech Republic and Slovakia had to deal with the first signs of its economic crisis in the following years. On the other hand, GDP growth improved in Hungary and accelerated in the Baltic States. On average, the growth of intraindustry trade was significantly below the potential in 1997. The different developments in

the five more successful CEECs could also be the reason for the coefficient estimated for GDP growth in the European Union being not significant for the subsample of these countries, although this coefficient would be significant for a subsample of the five CEECs between 1991 and 1996.[8]

Furthermore, dummy variables for individual countries carry a crucial importance of intraindustry trade for the associated countries.[9] We can see that the rise in intraindustry trade in countries with already high levels of intraindustry trade (Czech Republic, Estonia, Hungary, Slovenia, and to a lesser extent Poland) is significantly higher than the sole effect of domestic factors. The coefficients estimated for Romania, Bulgaria, and Latvia are significantly lower, while the coefficient of Lithuania is no longer significant.

4. Conclusions

As of 1997, the CEECs have already been participating successfully in the European division of labor. The European Union is the most important trading partner for all CEECs. The regional re-orientation of Central and East European trade was associated with successful restructuring. The rise of intraindustry trade was the most important feature of the recent developments in East-West trade in Europe.

Nevertheless, two groups of Central and East European countries can be identified with respect to trade performance. The most advanced CEECs (Hungary, Slovenia, and the Czech Republic) have already reached shares of intraindustry trade comparable to those of Italy, Spain, and Sweden. Poland and Slovakia have reached slightly lower levels of intraindustry trade. Nevertheless, these levels are comparable to Finland, Portugal, and Ireland. On the other hand, the share of intraindustry trade in EU's trade with Bulgaria, Latvia, Lithuania, and Romania have still remained at the level of EU intraindustry trade with Greece and Turkey. Thus, the division in more and less successful transition economies is also reflected by the trade structure. However, the differences between these country groups should not be overvalued, because we can now find similar differences within the European Union.

The Dixit and Norman (1980) model of trade with differentiated products and increasing returns to scale provides a good explanation for the structure of internal and external trade of the European Union. This approach foresees specialization of countries with different factor

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[8] Note that 1997 takes relatively high weight in the subsample of the five more successful CEECs because trade data of Slovenia are only available since 1993 and those of the Czech Republic and Slovakia only since 1994. The estimations for the subsample of the CEECs in period 1991 to 1997 are not reported because they do not bring any further insights.

[9] This result is similar to that of Hummels and Levinsohn (1995).

endowments, although these countries can also engage in intraindustry trade with different product varieties. Thus, the Dixit and Norman model complements the explanations provided by factor endowments (Heckscher-Ohlin model).

The estimated distributions seem to imply the existence of two major sectors, the first sector being characterized by a low or zero level of intraindustry trade, while the second sector reaches a very high share of intraindustry trade. The different shares of intraindustry trade in Europe are given by the weights of the sectors in the national economies. This confirms the predictions by models with differentiated products and increasing returns to scale.

High shares of intraindustry trade in EU's trade and the rapid convergence of EU's trade with the CEECs to the levels of intraindustry trade provide strong evidence for the validity of the new trade theory. The country-specific differences of the development of intraindustry trade in Central and Eastern Europe can be explained by the development of factor prices (interest rates and wages). The intraindustry trade between the EU and the CEECs significantly depends on the business cycle in the European Union as well as in the associated countries.

However, this paper demonstrates that intraindustry trade of the CEECs is significantly different from that of capital-abundant countries of the European Union, although "successful" CEECs like the Czech Republic, Hungary, and Slovenia converge to the structure of less capital abundant countries in the European Union, like Austria. In turn, other CEECs are still more similar to labor-abundant countries in Southern Europe, including Greece and Turkey.

The integration of the CEECs will be associated with a need of significant adjustment in many countries. The participation of the CEECs in the European division of labor has already induced increased specialization within the European Union, a contrast to the development in previous decades.

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Table A.1: Intraindustry Trade of Selected Countries with EU15, %

	Austria	Belgium	Denmark	Germany	Greece	Spain	Finland	France	UK	Ireland	Italy	Netherl.	Portugal	Sweden	Switzerl.	Turkey
1990	66.55	71.92	59.64	72.30	27.30	63.37	45.30	77.79	69.73	52.99	57.85	69.15	42.99	62.31	62.44	23.77
1991	67.20	71.88	58.41	75.64	27.48	60.09	47.49	79.22	72.57	53.94	57.62	69.75	42.53	61.05	63.35	25.40
1992	67.57	72.61	59.10	74.98	25.80	63.22	47.14	80.38	73.25	51.84	56.90	70.32	41.51	61.23	64.02	22.74
1993	66.79	72.63	58.93	75.34	26.59	62.31	45.39	78.55	73.01	50.15	58.43	70.88	42.36	59.77	65.57	21.16
1994	66.90	72.26	56.92	76.17	27.78	62.08	45.53	79.20	74.37	49.69	57.89	71.55	41.92	60.23	64.37	26.04
1995	66.92	73.07	59.05	76.79	27.07	63.38	45.41	78.66	75.70	48.04	60.13	71.85	46.73	60.14	63.88	29.18
1996	67.20	74.21	59.58	76.07	26.44	64.73	45.97	78.74	75.83	49.88	59.54	72.04	50.16	60.56	64.42	26.76
1997	68.14	74.36	59.72	76.49	29.36	64.71	48.09	78.34	75.05	48.52	60.13	73.35	50.73	60.15	64.72	26.96
	CE6	**Bulgaria**	**CSFR**	**Czech R.**	**Estonia**	**Hungary**	**Latvia**	**Lithuania**	**Poland**	**Romania**	**Slovakia**	**Slovenia**	**Russia**	**Ukraine**	**Moldova**	**Israel**
1990	43.08	30.47	41.30	NA	NA	42.63	NA	NA	32.70	23.82	NA	NA	NA	NA	NA	47.16
1991	46.53	30.26	46.64	NA	NA	45.75	NA	NA	34.34	29.26	NA	NA	NA	NA	NA	43.70
1992	46.01	31.31	49.72	NA	17.98	48.48	16.90	11.57	35.50	25.70	NA	49.11	16.98	16.76	14.33	42.42
1993	47.84	36.91	53.80	54.87	23.46	50.18	15.01	15.15	36.26	27.63	39.88	53.19	20.34	22.35	17.38	44.67
1994	50.62	35.32	56.51	56.62	35.47	51.31	17.74	19.37	37.56	30.44	43.50	55.65	18.30	23.83	17.79	42.82
1995	52.23	32.61	58.94	58.90	37.59	54.07	23.64	22.71	39.65	29.62	47.46	58.06	18.90	23.80	15.65	45.59
1996	53.78	35.23	60.42	60.33	38.09	55.24	20.93	21.20	39.41	30.29	49.65	58.67	17.73	20.49	13.11	45.99
1997	56.48	33.62	61.95	63.98	36.14	56.78	24.47	22.45	40.61	30.75	49.53	57.99	16.32	22.09	16.70	47.89

Note: CE6 includes Bulgaria, Hungary, Poland, Romania, Slovakia, and the Czech Republic.

Table A.2: Intraindustry Trade in the Manufacturing Sector of Selected Countries with EU15, %

	Austria	Belgium	Denmark	Germany	Greece	Spain	Finland	France	UK	Ireland	Italy	Netherl.	Portugal	Sweden	Switzerl.	Turkey
1990	68.81	71.75	65.50	75.15	25.42	66.58	48.82	81.93	74.17	58.04	61.82	78.93	43.32	66.63	63.44	22.77
1991	69.66	71.90	63.91	79.96	24.69	63.35	52.05	83.55	77.76	58.40	61.57	79.37	41.98	64.89	64.03	21.48
1992	69.79	72.65	64.79	78.52	23.17	66.48	51.28	84.90	77.90	56.37	60.55	79.79	41.87	65.28	65.01	21.66
1993	68.73	71.36	62.78	79.59	22.46	65.44	49.20	82.28	76.41	55.31	61.02	78.00	42.10	63.34	66.43	19.39
1994	68.93	71.62	60.49	80.23	24.03	64.91	49.31	82.48	78.13	53.21	60.49	77.86	41.70	63.74	64.66	25.33
1995	67.43	72.48	61.45	80.59	23.78	65.53	47.07	81.65	79.47	50.64	62.20	77.55	45.99	62.17	64.30	27.55
1996	68.06	73.53	62.48	79.97	23.10	67.07	47.48	81.74	80.11	51.28	61.78	78.05	50.33	62.22	65.39	26.21
1997	68.97	73.28	62.71	80.35	26.07	67.24	49.90	80.95	78.70	48.97	61.53	78.52	49.93	61.84	65.56	26.19
	CE6	**Bulgaria**	**CSFR**	**Czech R.**	**Estonia**	**Hungary**	**Latvia**	**Lithuania**	**Poland**	**Romania**	**Slovakia**	**Slovenia**	**Russia**	**Ukraine**	**Moldova**	**Israel**
1990	44.83	28.69	43.02	NA	NA	46.92	NA	NA	36.84	24.77	NA	NA	NA	NA	NA	51.45
1991	46.21	29.23	47.18	NA	NA	51.15	NA	NA	35.27	27.60	NA	NA	NA	NA	NA	46.96
1992	47.42	31.88	50.62	NA	26.20	52.37	25.62	17.78	38.66	24.46	NA	50.05	24.04	20.16	13.67	45.22
1993	48.61	35.95	54.85	56.03	26.67	52.65	26.19	22.25	38.07	25.42	40.45	54.49	19.14	21.11	17.50	47.11
1994	51.05	36.85	58.04	58.90	38.70	53.42	24.66	23.46	38.95	27.63	44.43	57.51	15.04	20.32	16.36	44.80
1995	52.51	32.38	60.52	61.07	39.51	56.20	24.92	24.43	40.41	27.84	48.12	59.55	14.78	21.46	18.69	47.23
1996	54.38	35.13	62.27	62.67	39.84	57.41	24.20	22.01	40.64	29.81	50.77	60.75	14.61	21.39	14.51	48.36
1997	57.34	33.90	63.78	66.43	37.63	58.27	23.87	22.91	41.69	29.32	50.04	60.27	12.73	21.89	16.31	50.16

Note: CE6 includes Bulgaria, Hungary, Poland, Romania, Slovakia, and the Czech Republic.

Table A.3: Marginal Intraindustry Trade of Selected Countries with EU15, %

	Austria	Belgium	Denmark	Germany	Greece	Spain	Finland	France	UK	Ireland	Italy	Netherl.	Portugal	Sweden	Switzerl.	Turkey
1990	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1991	39.25	36.54	26.14	15.52	15.85	26.55	23.47	47.85	18.17	26.59	34.70	39.17	25.36	39.84	39.51	8.34
1992	43.60	58.88	32.63	37.94	11.58	45.09	18.71	56.41	48.30	28.22	33.09	47.36	30.78	27.94	38.29	15.90
1993	50.11	57.17	45.86	51.53	16.03	47.41	33.66	67.77	51.54	41.14	48.00	49.96	26.52	38.58	36.34	7.71
1994	49.79	53.20	39.61	61.46	15.48	51.38	38.88	60.43	55.00	37.59	42.44	55.94	20.44	44.90	38.52	3.56
1995	40.87	65.00	49.62	73.12	16.27	53.41	22.81	70.40	65.08	33.27	56.00	63.05	39.67	42.98	54.80	24.82
1996	42.19	40.81	29.74	44.59	15.69	38.16	22.03	52.54	47.24	23.69	30.29	50.85	22.85	39.16	39.92	15.36
1997	37.55	43.35	32.14	39.00	15.79	23.95	27.01	31.88	29.10	26.90	19.51	34.28	20.53	28.91	43.95	14.12

	CE6	Bulgaria	CSFR	Czech R.	Estonia	Hungary	Latvia	Lithuania	Poland	Romania	Slovakia	Slovenia	Russia	Ukraine	Moldova	Israel
1990	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1991	34.20	12.28	35.32	NA	NA	35.04	NA	NA	22.39	12.25	NA	NA	NA	NA	NA	15.68
1992	34.45	18.84	42.51	NA	16.46	37.58	14.96	10.13	17.88	11.07	NA	NA	12.25	12.60	11.09	22.28
1993	23.58	17.73	28.49	NA	14.48	18.98	9.96	10.57	21.88	13.66	NA	48.46	5.50	13.06	10.53	24.48
1994	47.02	24.61	50.10	48.67	30.97	44.35	9.11	12.16	25.33	20.36	36.02	34.19	5.56	6.65	7.54	22.60
1995	50.11	23.74	57.34	55.21	32.48	45.12	14.93	13.03	35.01	21.84	44.70	47.66	10.59	6.90	8.62	38.11
1996	38.16	11.58	44.83	43.85	29.53	31.89	7.69	11.69	19.61	16.98	30.09	31.63	4.66	8.80	5.02	22.02
1997	41.22	19.02	34.22	33.93	26.00	40.81	9.75	13.88	24.79	19.01	22.40	31.92	5.57	9.40	9.12	21.52

Note: CE6 includes Bulgaria, Hungary, Poland, Romania, Slovakia, and the Czech Republic.

Table A.4: Marginal Intraindustry Trade in the Manufacturing Sector of Selected Countries with EU15, %

	Austria	Belgium	Denmark	Germany	Greece	Spain	Finland	France	UK	Ireland	Italy	Netherl.	Portugal	Sweden	Switzerl.	Turkey
1990	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1991	42.12	34.73	31.86	15.62	19.35	26.87	25.92	52.81	19.67	29.95	37.29	43.69	30.30	44.26	41.62	11.36
1992	45.31	60.19	37.34	41.33	12.86	49.70	21.25	60.57	49.90	30.41	35.83	52.40	33.68	30.29	40.26	17.09
1993	53.03	59.96	53.84	54.15	14.87	52.51	35.96	72.27	57.66	45.79	52.56	66.03	29.25	42.00	40.45	8.47
1994	51.97	56.24	42.68	66.23	13.70	52.80	42.92	63.98	59.16	40.07	45.36	62.93	21.04	48.30	39.80	2.78
1995	41.83	67.49	53.19	77.06	16.72	58.54	23.76	73.05	69.64	35.72	60.14	67.92	40.31	44.98	58.05	25.40
1996	42.14	39.03	32.06	47.09	18.36	44.95	21.73	54.13	54.21	21.75	35.67	50.80	21.84	43.54	42.07	14.01
1997	37.61	43.18	34.94	42.13	17.52	27.58	30.48	31.64	30.33	29.23	20.46	39.44	22.12	31.93	45.49	15.06
	CE6	**Bulgaria**	**CSFR**	**Czech R.**	**Estonia**	**Hungary**	**Latvia**	**Lithuania**	**Poland**	**Romania**	**Slovakia**	**Slovenia**	**Russia**	**Ukraine**	**Moldova**	**Israel**
1990	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1991	38.50	14.58	36.37	NA	NA	38.99	NA	NA	27.05	16.34	NA	NA	NA	NA	NA	15.55
1992	40.15	22.66	44.64	NA	26.20	43.44	25.62	17.77	20.40	14.13	NA	NA	22.85	17.61	13.67	22.47
1993	28.27	14.77	32.49	NA	18.51	23.87	21.21	20.10	25.28	14.21	NA	51.42	9.49	12.66	11.87	27.84
1994	50.91	26.73	54.43	54.40	38.95	47.12	18.49	19.14	28.62	23.53	36.74	35.97	7.37	9.50	7.29	24.49
1995	52.07	26.43	60.01	57.75	36.55	47.52	19.87	19.08	37.75	23.03	46.46	49.90	13.96	9.56	10.17	42.39
1996	41.84	12.72	47.22	46.58	32.48	35.38	12.71	12.95	23.53	18.17	29.84	32.07	6.88	10.96	6.19	25.50
1997	45.03	19.36	36.90	36.81	28.50	44.13	17.08	14.78	27.81	20.82	23.12	34.53	7.42	12.07	12.60	24.03

Note: CE6 includes Bulgaria, Hungary, Poland, Romania, Slovakia, and the Czech Republic.

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